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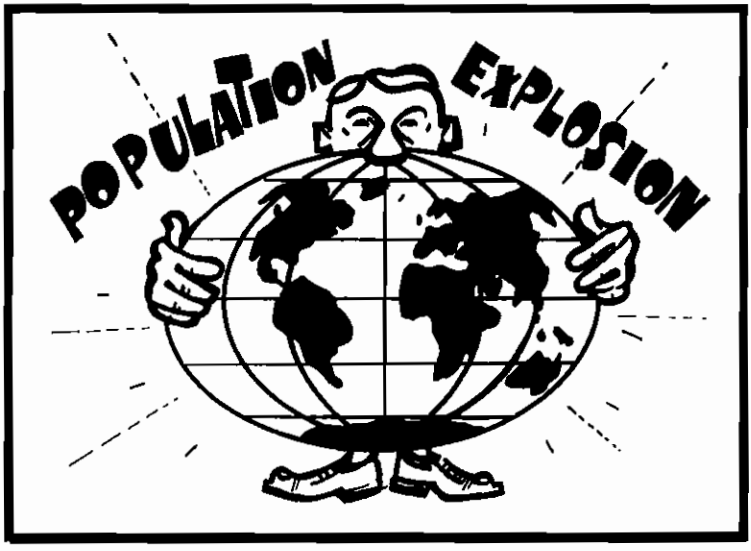

POPULATION: THE EXPLOSION HEARD ROUND THE WORLD

A Research Paper written by
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School of Naval Command and Staff, 1966

INTRODUCTION

Freed from the historical checks on population--disease and famine--today's population is soaring to phenomenal heights. If the world population continues to increase at its present two percent rate, the present population would provide enough people, in lock step, to reach from the earth to the sun in 237 years; or it would provide one person for every square foot of land surface on the globe, including mountains, deserts, and the arctic wastes in about

six and one-half centuries. These periods of time may seem long when measured by the length of the individual lifetime, but they are small when measured in the time perspective of the development of man.

Comparing population projections to the estimated carrying capacity of the earth produces alarming possibilities. Responsible authorities estimate the earth's capacity at figures ranging from 5 billion to 15 billion. Barring unforeseen calamities, the lower estimates will be exceeded prior to the end of this century.

The largest population increases are occurring in the so-called underdeveloped nations that comprise most of Asia, Africa, and Latin America. Increases of the expected magnitude in these areas that are least equipped to cope with them must necessarily have profound economic, political, and military implications. It is the intent of the author to consider these aspects of the "population explosion." Though solutions to problems posed suggest themselves, detailed treatment of solutions are vastly complicated and are beyond the scope of this paper.

This paper was developed primarily from the works of eminant demographers with frequent reference to economic and political writers.

The purpose of this paper is to assess the military implications generated by the political and economic difficulties of overpopulation.

I--POPULATION GROWTH--PAST, PRESENT, AND FUTURE

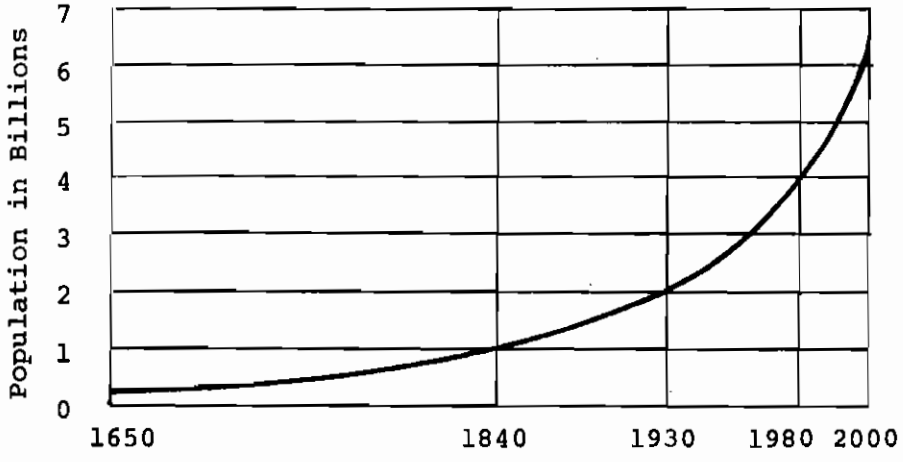
The age in which we live could very well go down in history as the age of the peopling of the earth. The rapid growth of population is unique in human existence. Freed from the historical checks--disease and famine--today's rising population is rapidly assuming the position of the most ominous problem facing our troubled world.

Summary of Overall Population Growth. During man's early existence, population growth was very slow. The trends, if reconstructed, would resemble a staircase with periods of increases and declines corresponding to the progress of civilization.[1] When innovations such as the domestication of animals or the development of agriculture increased the food supply, the population increased more rapidly until population pressures, famine, and pestilence stopped or reduced the growth.[2]

By 1000 B.C., the world population was approximately 100 million. During the next thousand years, the population doubled, apparently numbering somewhat over 200 million at the beginning of the Christian Era. The average growth rate was estimated at .06 percent annually during this period.[3]

In the year 1650, the population of the world was about 460 million, as shown in Figure 1. It accelerated rapidly, more than doubling in the 190

Fig. 1 - Estimates of Past/Future World Population*



*Richard N. Gardner, "The Politics of Population," *Saturday Review*, 7 September 1963, p. 7.

years from 1650 to 1840. Population doubled again between 1840 and 1930. Projections through the year 2000 are shown in Figure 1.

The projection shown in Figure 1 is the "high" estimate prepared by the Population Branch of the United Nations. This agency also lists a "medium" estimate of 6,280 million and a "low" estimate of 4,880 million for the year 2000. These projections are based upon combinations of trends which might reasonably be expected to flow from current populations of different types, ranging from those in which both fertility and mortality are high to those in which both are low. The "high" estimates assume, essentially, a continuation of high fertility and rapidly falling mortality in today's high fertility areas, and the "low" estimates assume a rapid decline in fertility in the present high fertility areas. A "medium" estimate follows the same pattern as the "high" estimate until 1975 and thereafter allows for moderate fall in fertility.[4]

Demographic Grouping of Nations. For the purpose of this paper, the world is divided into three groupings on the basis of the stage of industrialization attained.

Group I nations, which consist of those nations comprising approximately 15 percent of the world's population, have completed the industrial revolution and are characterized by a low death rate and a relatively stable birth rate. Countries falling into this group are the United States, Canada, Western Europe, New Zealand, and Australia.[5]

Group II nations, which contain about 21 percent of the world's population, are currently engaged in the transition from an agriculturally-orientated to an industrially-based economy. In these countries the death rate has fallen substantially. The birth rate has also decreased somewhat but not enough to keep the population from growing rapidly. Countries

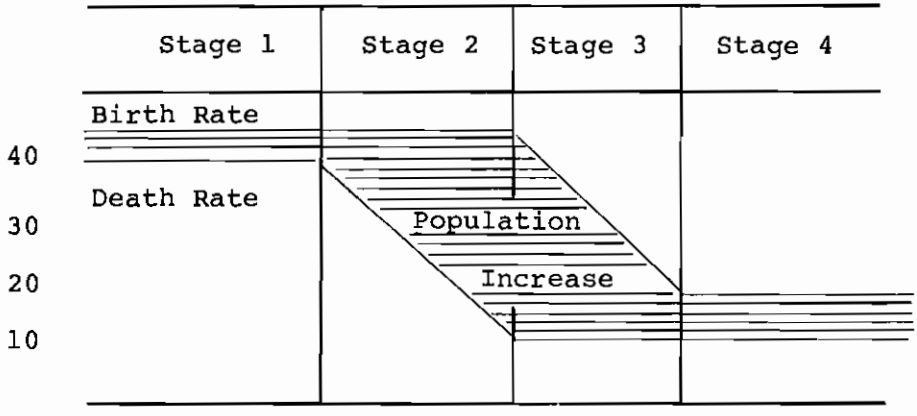
falling into this group are the Soviet Union, Eastern and Southern Europe, Japan, and Argentina.[6]

Group III nations are those nations, which comprise about 64 percent of the world's population, that have just begun or have yet to begin the industrial transition. In terms of population, they are characterized by a very high reproductive rate and a high, but decreasing, death rate. Countries falling into this category include those of the Far East, Africa, the Middle East, and Latin America.[7]

History reveals that the process of industrialization has had profound effects on population numbers. There has been a definite pattern of demographic progression undergone by the now developed nations in their evolution to Group I status.

The Demographic Transition. Traditionally all countries that have progressed into modern-country status have completed the demographic transition as indicated in Figure 2.

Fig. 2 - Demographic Transition*



*Sax, p. 17.

The first stage, characteristic of all parts of the world before the 17th century, is that of high birth rates nearly balanced by high death rates, which results in a stationary population or one with a slow growth. High birth rates were essential if a people were to survive. It is estimated that in 14th century England a family was required to have 10 to 11 children to replace the population decimated by epidemics of the bubonic plague.[8] Parts of Africa are still in this stage of the demographic transition.

The second stage is one of high birth rates with declining or low death rates and a stage of rapid and accelerating growth. Stage two for the industrialized nations began with the Industrial Revolution.[9] Improved agricultural practices increased the food supply, which reduced the effects of famine, while the institution of sanitation improvements lessened the effects of epidemics.

The process of interaction between industrialization and population growth can be seen to advantage in 18th century England: increased urbanized population with steady purchasing power, a rise in food prices; increased agricultural production, a drop in food prices; increased purchasing power for industrial goods and services, a growth of urban or industrial population--and so on. For the urban population, assured food supplies and steadier prices were a basis for marriage and a better chance of survival for themselves and their offspring. For the rural population, the assured urban market had much the same effect. Thus, the mortality rate was greatly reduced while the traditionally high birth rate continued.[10]

Agricultural advances made it possible for fewer farmers to feed more people. This forced much of the population increase to urban areas to better their economic opportunities. This shift from rural to urban areas was instrumental in bringing about sweeping economic and social changes which mark stage three in the transition.

Economic change affects fertility through its impact upon income, the price structure, and the cost and utility of children. An increase in average income would normally cause an increase in fertility. However, this increase in income is usually accompanied by corresponding expenses incurred in reproducing children since outlays for rearing children are influenced by the income of the parents. Furthermore, an increase in a family's income may so modify its spending pattern that it increases its expenditures as much or more than income has risen. In general, the increased fertility may prove temporary and even be reversed as spending habits change.[11]

Changes in price structure also affect fertility. Generally, if the prices of goods and services necessary in rearing children are high, relative to other prices, fertility will tend to be reduced; the cost of children will be relatively high, hence, unattractive. This is what has happened during much of the past 150 years, with the prices of so-called convenience and luxury items having fallen so much that they absorbed funds that might otherwise have been expended on children.[12]

Finally, as the utility of children diminishes, fertility will tend to fall. The primary forms of utility derived from children in the past--child labor and old age security--have been largely negated in the developed world by government legislation abolishing child labor and providing old age pensions.[13]

These considerations, in addition to later marriages, improved education, and better economic opportunities for women, greatly reduced the birth rate.[14] In general, this process began in the cities among the upper and middle class and spread outward geographically and downward socially.[15] By 1900, in the now industrialized nations, the small family concept was firmly established. The birth rate was generally stationary, or nearly so, which corresponds to stage four and the completion of the demographic transition.

Demographic Problem Areas. The undeveloped countries are now in stage two of the demographic transition. Where the industrialized countries began the transition as the result of economic improvements and industrialization, most of the underdeveloped countries entered as the result of the technology of others, without significant economic improvements or increased standards of living.[16] Increased food supplies, sanitation, and vaccinations lessened, then eliminated, the epidemics that had traditionally taken a heavy toll of the population. Colonial policy did not favor industrialization, urbanization, and education that were historically associated with fertility decline. As a result, the colonial people remained in the villages where there were few changes in ways of living, family values, or social institutions to decrease fertility.

The greatest problem area is Asia, which holds more than half the world's population.[17] During the 300 years of the demographic transition, the European civilization had a sixfold increase in population with a fourfold increase in standards of living.[18] During the same period, Asian population increased more than five times with no increase in living standards. Where Europe was sparsely populated in the early stages of the transition and had the New World as an outlet for excess population in the later stages, Asia is already densely populated, with little new land available for cultivation within her borders and no new frontiers available that are capable of absorbing large numbers of immigrants.[19]

The Middle East and North Africa are beset by the same dilemma confronting Asia--a large population accompanied by rapid population increases with insufficient resources to support that growth. The densities of people on cultivated land in much of this area are comparable to those found in the river valleys of India, Indonesia, and China.[20]

The sub-Saharan portion of Africa is sparsely populated as a whole, but the stage is set for

enormous demographic problems that will likely plague future generations. Poverty is great, malnutrition is widespread, and the land is deteriorating. Future development in Africa will probably consist of the establishment of a primary subsistence agriculture comparable to that from which the Asian peoples began their centuries of population increase, accompanied by little industrialization.[21] If subsistence agricultural life runs true to form, it will permit the full realization of the desire for children which is so pervasive in African culture, while improving medical services will drop death rates sharply.[22] Thus, the economic and political future envisioned for Africa provides an environment for maximum rates of population increase with minimum developments conducive to the reduction of births.

Latin America differs from Asian and African areas in that most of the countries have long been independent; foreign migrants and indigenous people have tended to assimilate rather than to segregate; and there are relatively few people in relation to resources. However, in many areas, the level of living is no better than it is in the Orient. There are areas of very dense settlement and areas sparsely populated, but resettlement is extremely difficult.[23] It is within this region that the largest population increases are occurring.

Future Population Trends. During the last decade, the underdeveloped countries produced about 80 percent of the world population increase.[24] China alone produces more babies each year than all the free world combined.[25] This trend is forecast to accelerate in future years. As modern medical and public health measures reach further inland to remote villages, logically, the mortality rate will decline.[26]

In addition to lower death rates, the compounding of past high birth rates will also add to future population of Group III countries. Girls in their teens will increase by 50 percent or more in the

years from 1960 to 1985. If past customs concerning marriage frequency and age remain unchanged, new families in 1975 will be half again as numerous as those formed in 1960. Given equal rates of childbearing, annual numbers of births in the late 1970's will be one and one-half times as great as the annual numbers in the early 1960's.[27]

Between 1950 and 1975 the annual population increase of North America is predicted to increase at 1.7 percent annually and that of Europe at 1.2 percent, while that of Asia will be growing at an average annual rate of 2.4 percent, that of Africa at 2.1 percent, and that of Latin America at 3.4 percent. Between 1975 and 2000, while the rate of growth for North America is forecast to average about 1.2 percent and that for Europe is 1.0 percent, the rate for Asia will be 3.0 percent, that for Africa 2.8 percent, and that for Latin America will be 3.6 percent (a rate that would double the population every 18 years).[28]

In the underdeveloped countries, the connection between society, economy, and mortality that has existed throughout human history is broken. Ancient birth rates and modern death rates coexist. There is manifold evidence that indicates that the high fertility and the consequent high rates of population increase will persist as long as the conditions and the values of the peasant society exist.[29]

II--ECONOMICS AND POPULATION

The underdeveloped countries are beset with many problems in their uphill struggle to become developed nations. There are shortages of capital and food, widespread poverty, and, most perplexing of all, an everincreasing multitude of new mouths to feed that threaten to gobble up the small economic advances gained with tremendous effort.

Agriculture and Population. Fundamental to successful economic development is a strong productive agricultural sector. Unless sufficient capital is available to procure food from abroad, a nation's farmers must not only feed the present population but be capable of rapidly increasing productivity as the development process progresses. This rate of increase in output in agriculture may set the limit within which the transition to modernization proceeds.[1]

In an industrializing society, agriculture must perform a triple function: (1) modernization requires considerable working capital, much of which must come from surplus agricultural products unless a nation possesses large amounts of raw materials; (2) as economic changes progress, past history clearly indicates that the population will expand rapidly, requiring increased food supplies to provide for these new numbers; (3) the agricultural sector must improve its technical efficiency so that it can release increasing amounts of labor into industrial production while supporting more and more urbanization.

Difficulties in agriculture in areas of rapidly expanding population are manifold. Two-thirds of the world's people subsist on a diet which is inadequate in both quantity and quality for good health and vigor.[2]

To aggravate this enormous problem, the population explosion is occurring in the very regions that are least equipped to feed themselves. In the needy countries during the past five years, the percentage of increase in population nearly doubled the percentage of increase in food production. Before World War II, the developing nations exported 11 million tons of grain. Last year these same nations imported 25 million tons of grain. Even so, the hungry nations are eating less. In India alone, five million children die annually from malnutrition.[3]

To provide simple adequacy to the world's teeming millions would require an immediate increase of available food in the order of 25 percent.[4] The present level of technology prevents a rapid, short-term increase of this magnitude.

On a long-term basis, to supply an adequate diet for all people by 1980 would require an annual increase in food production of 2.25 percent.[5] Indications are that this, too, is unlikely as North America is the only region of the world capable of sustaining an average increase in food production of 2.0 percent per year. Over the last 15 years Europe achieved less than 1.0 percent, and the Far East earned no more than .04 percent increase of production each year. The world average is under 1.0 percent.[6]

Contrary to the popular belief that large areas of previously uncultivated land can be put to the plow, land that can be profitably cultivated is quite limited. The tropics, for example, are believed by many to offer an agricultural promise of almost limitless potential, but less than 5.0 percent of the soil in this region measures up to the level of fertility expected for profitable farm production.[7] The fact remains that the land for farm production upon which the world must depend consists of only 7.7 percent of the earth's total land area, and little of this is in regions where population is growing most rapidly.[8]

The requirements of nature for food production are so stringent that man has been defeated in most of his attempts to extend the boundaries. Consider Khruschev's often-cited attempt to open virgin land in the arid steppes of Kazakhstan in 1954. One hundred million acres of marginal land were converted to grain production. The first two years adequate rainfall allowed good crops. Following years saw declines because of inadequate rainfall. Latest reports indicate that the entire program has foundered. Farm machinery is rusting away, and grain production is so far off that thousands of animals

have starved.[9] This failure to extend nature's boundaries occurred in a technologically advanced country with sufficient capital and know-how. How much more difficult would be success in a country lacking technology and capital?

Even though food is such an immediate, vital, and universal necessity, it is unlikely that the underdeveloped nations will meet the challenge of self-sufficiency. In India, for example, the twin factors of unchecked population growth and limited food production are expected to meet head-on prior to the end of the decade.[10] Even now, to keep body and soul together, she must import six million tons of grain, nearly 10 percent of her total food supply in an ordinary year. (This figure represents roughly 20 percent of the U.S. wheat crop.) This year, due to drought, the deficit may run as high as 15 million tons.[11] If present trends of population growth and farm output persist, a team of U.S. Department of Agriculture economists have concluded that India alone will require fully one-half of the U.S. wheat crop to feed its masses by 1970.[12] Yet, farmers continue to use homemade implements and primitive irrigation methods, while the ancient system of inheritance of property by division has split holdings into tiny plots making efficient agriculture impossible.[13]

As food production slips in relation to population in the underdeveloped countries, long-term development projects must yield priority to short-term schemes for feeding the additional population, if necessary by imports which eliminate capital planned for industrialization.[14]

Overpopulation and Capital. The rate at which a country develops depends largely on its ability to direct its resources into investments rather than consumption and to uses which raise tomorrow's output rather than satisfy today's demands.[15]

This is difficult when production is very low and the basic needs of the population absorb a high proportion of the productive capacity. For example, in very backward countries at least 80 percent of the active population must work to satisfy the community's subsistence needs. Since income is unevenly divided even in communities with the lowest productivity, demand for nonagricultural goods and services by the privileged minorities absorbs productive capacity not used to meet the subsistence of the community as a whole, leaving little for savings and investments.[16]

Further, absorption of capital by population growth vastly complicates an already herculean task. If there are too many human beings to feed, house, and educate, what little capital and skill there is must be used up looking after the growing generation with little or none left with which to industrialize.[17]

Some calculations made in India concerning future housing needs illustrate the magnitude of the problem. Disregarding the cost of rural housing and making the assumption that it can be carried out entirely with local labor, in the 30 years from 1956 to 1986 an investment of $25 billion in additional urban housing will be needed. This figure omits the costs of improvements on existing housing, roads, sewage, water supplies, and other services.[18]

Estimates of the amount of capital absorbed by population increases may be made by applying a widely quoted rule of thumb, i.e., for the maintenance of a stationary standard of living, 3.0 percent of the national income must be saved and reinvested for each 1.0 percent of population growth.[19] Supposing that the population growth of an underdeveloped country is averaging 2.5 percent per year, the 3.0 percent rule suggests that 7.5 percent of the national income must be saved to support the population increase. Compare this figure to the overall growth rate of the underdeveloped countries during the 1950's (3.0 percent a

year) and the enormity of the problem is clear.[20] To get ahead of the birth rate and make meaningful progress toward development, the rate of savings devoted toward productive capital should be between 12 and 15 percent of the national income, which is thought to be a central point in achieving a sustained growth.[21] This amount of saving is needed to achieve a momentum of saving without which development remains patchy and the growth of each sector fails to assist in the growth of the rest.[22] Savings can hardly be pushed up to that level given the original poverty of today's underdeveloped nations.

Population and Productivity. When total population increases steadily over a period of years, there is, necessarily, a steady rise in the labor force as larger numbers of persons reach working age. In developing nations this rise permits a specialization of labor and efficiency in production, making possible a higher standard of living by population growth.[23]

Beyond a certain point in population growth, however, returns increase by smaller increments until they level off and finally decrease. At the point where they become constant, the population has reached its optimum. Further increases in population mean a lower national standard of living.[24] Even though total production may increase, per capita production decreases causing an overall reduction in standard of living. Nearly all the agricultural societies are now faced with constant or decreasing returns.[25]

As overpopulation worsens, the phenomenon of concealed unemployment frequently occurs in agriculture and services. If there are three persons farming a plot that could be tilled by two, then only two of these are really fully employed, and the other represents concealed unemployment. This concealed unemployment usually exists because the resources of the farm family are too small to keep all members

fully employed throughout the year, and there are no alternative employment opportunities.[26]

Underemployment is difficult to measure, but a general estimate is that in densely populated areas as much as 25 percent of the farm labor force could be withdrawn without diminishing agricultural output.[27] Thus, agricultural productivity in the overpopulated countries is very low in relation to developed countries. Production per head of the farm population of North America and Northwest Europe appears to be 10 to 20 times greater than in the Far East, Near East, and Latin America.[28]

If industry could be developed, increasing returns would be possible in manufacturing and public utilities.[29] Most of the underdeveloped countries are precluded from industrialization by a lack of physical resources, technical skills, and capital. Further increases in numbers only means less and less for more and more.

Overpopulation and Age Distribution. Another complicating factor caused by high birth rates is a much higher proportion of dependent children in the poor countries than in the rich countries; too, the life expectancy is lower. When women bear many children, the population is necessarily young.[30] As an example, the percentage of the population below 15 years of age is about 40 percent in Asia, Africa, and Latin America, but only about 26 percent in the United States and 23 percent in the United Kingdom. The average expectancy of life of a male child is about 66 years in the United States and Canada and 69 years in Norway; it is less than 40 years in parts of Asia and the Far East, the Middle East, and Latin America, and as low as 25 years in Egypt and 32 years in India. The mortality rates are higher among the younger age groups in the underdeveloped countries, and the productive years remaining for those who survive childhood are much fewer.[31] If the productive years are taken as 15 to 64 years, the proportion of population in the labor force is much less in those

countries experiencing rapid population increases. This causes a relative deficiency in adult manpower and a reduction in the productive power of the labor force. This unfavorable age structure requires the economy to devote a considerable part of the resources to the maintenance of children who die before reaching a productive age.[32]

Foreign Assistance and Population. An often suggested remedy to the economic plight of the overpopulated nations is massive outside aid designed to lift the masses of illiterate people into an industrialized, Westernized economy almost unawares.

This type of action appears unrealistic and fraught with complications. In 1951 a United Nations report estimated that a reasonably fast development of industry and agriculture in underdeveloped areas would cost annually about $19,134 million.[33] Although this estimate is still widely quoted, it would require a large upward revision to accommodate the population increase since that time. Even the 1951 estimate is much greater than can be raised in practice.[34]

Even if such enormous funds were forthcoming, other equally tremendous difficulties would still have to be surmounted. Such levels of investment cannot be achieved simply by pouring in money as each country has limited capital absorption capacity.[35] Usually, the most important limitation on a poor country's capacity to absorb capital is the lack of technology. If the amount of investment is greatly increased, the marginal productivity may decline rapidly and may even become negative.[36] Even if the shortages of technicians and skilled labor were overcome, extensive surveys and many other essential preliminaries which take years of work would be mandatory. If all essential preparation should be completed and the capital assured, the fact remains that economic development on such a scale would promptly lead to a yet steeper rise in population in most countries.[37]

In the absence of checks, it is the natural increase in population, and not living standards, that will respond to externally financed development. The more development is pressed, the more population will increase, until the problem of raising living standards has been greatly aggravated and its ultimate solution greatly complicated.[38]

The experience of decades of development in India and Egypt under the British and Puerto Rico under the Americans shows how rising numbers of humans can take away the opportunities for improving standards of living. History has shown that the great bulk of economic development must come from within. There is no factual basis in development experience, nor is there any sound economic argument to support claims that a greatly increased outside injection of resources could rapidly bring about general increases in standards of living in underdeveloped territories.[39]

III--POPULATION AND POLITICS

There is an interrelationship between demographic, social, economic, and political factors that causes a reciprocal action; that is, population changes affect social, economic, and political developments, and these developments, in turn, affect population.

In the underdeveloped countries, an excessive number of humans is likely to prevent improvement in the level of living, thus increasing political unrest and bringing about frequent changes of government.

Urbanization. Increasingly large proportions of the populations of the underdeveloped areas of the world are becoming concentrated in urban areas. The urban populations of Africa, Asia, and Latin America are growing at rates that are almost twice as high as the overall population growth rates.[1]

In the economically advanced nations, urbanization follows and is a result of technological advance and of a high level of living, while in the developing countries urbanization has begun well before any appreciable economic growth has occurred.[2]

While small economic gains have probably caused some of the population shift in the underdeveloped countries, other factors have also influenced this trend. One of these factors is a substitution of national for foreign personnel in government, coupled with a great expansion of governmental functions. Another more significant factor is the vast increase in the overall population. In consequence of this population explosion, the rural countryside has come to resemble a population reservoir filled to overflowing. The resulting surplus, which in most cases exists at the barest subsistence level, moves to the cities hoping to find an escape from the poverty of the overcrowded countryside. This movement is premature as only a small fraction of the newcomers manage to find employment in their new environment. The remainder are forced to join the already excessive number of urban unemployed who hang onto the edges of the city in poverty and despair. They must live by their wits or the charity of an occasional kinsman who is fortunate enough to find employment.[3]

In the cities where these conditions exist, land prices are so high that even the employed can never hope to own a home. In Manila, for example, an acre of land costs from $25,000 to $30,000.[4] The vast majority of the migrants find it beyond their means even to rent a decent house and find themselves forced into filthy concentrations of rubble, scrap, and human beings. In Calcutta where the population increased from 4 million to 6.3 million between the years 1950 and 1960, one-fourth of the population lives in one-eighth of the total land area. In Rio de Janeiro, about one million persons live in subhuman conditions in the "shanty villages" on the fringes of the city.[5]

This massive exodus to the cities is not without its social cost. Separated from the informal sanctions of family and village, compelled to live in squalor, crowded with strangers, and subjected to unpredictable employment opportunities, the new urban population is a breeding ground for crime, violence, and political unrest.[6]

This politically explosive situation promises to worsen in the future as large influxes of still more people invade the cities to try to improve their miserable lot. Projections of the trend in Asia indicate that the urban population may triple from 1960 to 1975 if urbanization continues to increase at the rate it did from 1900 to 1950 and the total population continues to grow at the rate forecast by the United Nations.[7]

The Revolution of Rising Expectations. One of the most pervasive elements in the modernization process is the progressive widening of man's awareness of the uneven distribution of the wealth of the world. To note the extremes of the problem, North America in 1950 with about 16 percent of the earth's land surface, contained less than 9 percent of the world's population, but about 43 percent of the world's income; Asia, in contrast, with about the same proportion of the world's land surface (18 percent), had 55 percent of the world's population but only 12 percent of the world's income. Per capita income in Asia was at a level of about $50 a year compared with $1100 in North America.[9]

The awareness of this disparity is universal in the "have not" nations. Three forces tend to start it and keep it moving: widening contact and communications with more modern societies, the rise of trade and of cities, and the emergence of new generations born into a world where modern activity is fast becoming an established fact rather than a conscious break with the past. The widening of perceptions occurs first among a limited element of the elite of the society, especially those exposed to life outside the traditional society. It gradually spreads to wider segments of the population until it becomes a

popular rather than an elite phenomenon. Today there is almost no segment of even the most backward society that has not been touched by this process.[10]

The inevitable result of this knowledge is increasingly heightened tensions and frustrations. Uninformed and uneducated masses may remain docile for centuries despite misery and oppression, but the situation changes when information about the possibility of life under more favorable conditions is widely known. In the underdeveloped world, poverty is old, but the awareness of poverty and the conviction that something can be done about it is new.[11] The extent to which this frustration can grow was demonstrated in 1964 when the Indian Central Government attempted to impose food rationing in the state of Kerala. Angry mobs broke down the doors of government-owned graineries, and for about two weeks Kerala experienced not only a serious food shortage but also a virtual breakdown of law and order, with mobs demonstrating in front of the Government House in the capital of the state, attacking government officials, and raiding storehouses for rice and wheat.[12]

Rising expectations have invoked special tensions and unrest in former colonies upon their receipt of independence. The people had been led to believe that with independence would come immediate economic and social gains. In reality, the turmoil of transition usually made economic conditions worse than before.[13]

The leaders of the underdeveloped world are under tremendous pressure to meet some of the rising popular demands of the people. No government can come into office without promising a better life to its citizens, and virtually none can remain in power without fulfilling these promises.[14]

Political Instability. Compounding the political unrest caused by urbanization and economic dissatisfaction is the fact that the process of

modernization is profoundly disturbing to those living in a traditional society. They fear that it will deprive them of the power, respect, affection, income, or security afforded by the traditional way of life. Privileged groups do not readily give up their privileged status. Wealthy landowners, tribal chieftains, military commanders, and the old aristocracy often stubbornly resist change. The Traditional leadership may see modernization as thrusting on them new kinds of activity which they have neither the resources nor the skills to carry out successfully. They are likely to pay lip service to modernization while attempting to divert attention from it by stirring up other issues and to repress its advocates.[15]

On the other hand, those growing groups to whom modernization appeals strongly will be seeking with mounting intensity for ways to promote it. If they are frustrated in bringing about change peacefully, they may well conclude that violent overthrow of the existing government is the only way to accomplish their goal. If a revolutionary group does acquire power, it takes over a society demanding modernization but which has few of the required prerequisites. It must retain power by the same revolutionary techniques by which it obtained it or yield to yet another revolutionary group.[18]

Further heightening the tensions is the cold war conflict between the East and West. Both blocs are competing for the allegiance of the underdeveloped world. The alternate routes to modernization offered by these competing systems have a divisive effect that renders a difficult task even harder. A portion of the elite in most underdeveloped countries is committed to the Communist cause and can be counted on to complicate and frustrate the efforts of others to move toward modernization by Western methods.[17]

Communist China seems to contradict the premise that extreme population pressures are conducive to

political instability, but, on the contrary, it is probable that when the history of this century is written China will be the classic illustration of the role of demographic factors in instability.[18]

China's population growth, massive as it is in sheer numbers, has been less percentagewise than its underdeveloped neighbors because of the lack of health improvements and economic progress.[19]

China is only now beginning the demographic transition. The attendant population growth generated by the successful execution of developmental programs will likely be a major deterrent to that country's long-term economic advance and political stability.[20]

Even now China is experiencing difficulties in accomplishing her economic goals. Her so-called Great Leap Forward from 1958 to 1960 ended in a colossal failure. Industrial production fell by one-half between 1959 and 1962, and agriculture has only now regained its 1957 level, but now there are about 70 million more mouths to feed.[21]

Though little publicized, Red China is not immune to political instabilities. By the end of 1959, Peking reported a total of 8,323,680 cases of uprisings, sabotages, and other forms of resistance.[22] In 1961 the Communist government admitted that it was still battling around 60 million saboteurs and 10 million "bad elements."[23]

Even though there is only between one-half and three-fourths acre of cultivated land per person, a desperate shortage of capital, and about 17 million yearly additions to the population, the leaders of China stubbornly cling to the Communist doctrine that no population problem exists except in capitalist societies.[24]

It is difficult to foresee a satisfactory outcome from China's point of view. With every advance

in food production, in sanitation, and in housing, the population takes a further leap. The society will be subjected to terrific economic and political strains regardless of the leadership.[25]

Population Views of the Communist and Western Blocs. The Communist view of the population problem is basically that no such problem exists and that large numbers are good in themselves. It acknowledges that there are food shortages in some parts of the world, but it attributes these shortages to defects in the capitalist system. The Communist position is stated by Vasily Nemchinov, a member of the U.S.S.R. Academy of Sciences, as follows:

> Food shortages in many countries spring from defects in their social and economic systems. If the survival of semi-feudal relationships in agriculture are eliminated, and if agriculture is freed from the insupportable burden of land rent, the situation will change . . .. Soviet people believe that, given a rational social system, the achievements of modern social science and technology should make it possible to attain a genuine abundance of food in each country and throughout the world . . .. The solution of the world's food problem lies not in reducing the growth of the population, but in the radical re-organization of the economic and technical aspects of agricultural production.[26]

The Chinese Communists explain the poverty that still exists in China as a holdover of the evil influence of private enterprise inherited by the present regime. They maintain that this condition cannot be wholly eradicated at once but will be eliminated during a "certain transition period."[27]

This theory fits nicely into Soviet plans. While Russia is underpopulated and can absorb her population increase, further increases in the

non-Communist underdeveloped world is a source of embarrassment to the West. Soviet propaganda constantly holds before the developing nations the rapid economic gains attained by the U.S.S.R., but not of the terrible human costs involved. The Communists have also succeeded in associating the West with colonialism and the economic plight of the underdeveloped countries with capitalism. The Communist view has many adherents in the underdeveloped world.

Contradicting the Communist position, the predominant view in the West is that man's expanding numbers will eventually imperil his health, wealth, and safety unless fertility can be reduced in time.[28] It is easy to demonstrate that the burden imposed by man's increase will become an impossible one for the economically underdeveloped areas should their rates of population increase and climb as forecast in the United Nations projections. For example, Asia, merely to maintain her present low level of living, must increase her aggregate product by 60 percent between 1950 and 1975, and by an additional 75 percent between 1975 and 2000. To raise her per capita income to the European level for 1950 while continuing to experience her rapid population growth, Asia would have to increase her 1950 aggregate income 12-fold by 1975 and 21-fold by 2000. To achieve a per capita income equal to that of North America in 1950 while experiencing the projected population growth, Asia would have to increase her aggregate income 35-fold by 1975 and 62-fold by 2000.[29] The control of population growth would unquestionably decrease the magnitude of the task of industrialization.

Western feelings are that the only appropriate method of limiting population growth is birth control. The only alternative, barring nuclear war, is death control, which is obviously unacceptable.[30] Even though this proposition is a demographic fact of life, it provokes heated debates in view of prevalent value systems of today.

The most significant fact about all available methods of birth control is that they are by no means adequate to perform the task of slowing down explosive world population increase, especially in the underdeveloped world. The devices used in advanced nations are generally not well adapted for use in the more backward areas because of widespread ignorance, indifference, and superstition. Even if birth control were desired in these areas, a scientific breakthrough in this field would be needed to effectively limit the population growth.[31]

Many in the West believe that the time has come for the governments of the underdeveloped countries to give their population problems priority equal to that given economic development. Unless this task can be accomplished within the next few decades, governments could well be faced with economic, political, and social chaos, where death rates will rise to check population growth.[32]

IV--POPULATION AND MILITARY CONFLICT

There are three major determinants of national power: the size of a nation's population, the level of its economic development, and the skill and efficiency of its government. High standing in one respect may compensate to some degree for lack in another, but no nation can gain first-class status without all three. Canada has a modern economy and an efficient government, but her small population of less than 20 million relegates her to second-class rank. India has a giant population and a government of adequate efficiency, but unless she succeeds in modernizing her economy, she will have difficulty defending her borders.[1]

The Theory of Lebensraum. The direct result of overpopulation, according to popular belief, is *lebensraum*, that is, the forceful seizure of land in order to feed the excess population. The aggression by Germany, Italy, and Japan that marked the

beginning of World War II was largely justified by *lebensraum*. Japan sought to justify her seizure of Manchuria as a necessary measure to assure a food supply for her growing numbers, and in 1941 the Japanese foreign minister announced that Oceana could support 600 million to 800 million people and that it must be made a place to which Asiatic people could migrate.[2]

Italy also considered herself overpopulated and attempted to justify her conquest of Ethiopia as necessary to support Italian settlers.[3]

It was Germany who made the most of her demands for space. In the words of Adolf Hitler:

> . . . according to all common sense, logic, and all principles of a general human and of a higher justice, nay, even according to the laws of a Divine will, all nations ought to have an equal share in the goods of this world. It should thus not happen that one nation claims so much living space that it cannot get along when there are not even 15 inhabitants to the square kilometre, while other nations are forced to maintain 140, 150, or even 200 in the same area. But in no case should these fortunate nations further curtail the living-space of those peoples who are already suffering, by robbing them, for example, of their colonies.[4]

There are many today who believe that population pressures lead to war and that overcrowded lands may again turn to *lebensraum* to justify aggression. If this theory is valid, Australia and New Zealand probably will have the greatest fear because of the large differences in population distribution in the Far East. Japan has 643 inhabitants per square mile, India has 315, China has 178, and Indonesia has 152; but Australia has only three and New Zealand has 22.[5] Overcrowding becomes the more difficult with these large, empty spaces nearby to which emigration is

prohibited, especially when Australia and New Zealand are conducting a public hunt for new citizens to fill their empty spaces--a hunt for whites only.[6] Voicing dissent of this policy held by many Asians, Radhakamal Mukerjee of India states:

> The Pacific is, to a large degree, an Asiatic Ocean, and the islands, large or small, including the subcontinent of Australia and New Zealand, may be said to belong to a pan-Asiatic system. In this part of the globe, which is largely uninhabited, the doctrine of Asiatic *Lebensraum* cannot be dismissed off-hand nor the doctrine of the White Man's reserve taken for granted.[7]

Under sufficient population pressure, it is theorized that the larger nations in the Far East may resort to force to achieve access to additional resources. It is especially feared that Communist China, faced with the greatest absolute population increases to add to her already heavy burdens, may not confine her attentions only to the smaller nations within her reach. Her present actions relative to her boundaries with India and possible tensions over her boundaries with the U.S.S.R. contain explosive possibilities.[8]

The idea of *lebensraum* is simple and has a certain surface plausibility, but as far as the Axis powers were concerned, the theory fails to stand up under close examination. First, none of the complaining nations used what colonies they had as outlets for emigration. The Japanese never migrated in large numbers to Formosa, Korea, or Manchuria. The total net migration of Italians to Africa from 1886 to 1930 was only about 7000. In 1913, after some 30 years of colonization, there were twice as many Germans in the Bronx as there were in the entire German colonial empire. The second inconsistency was that the Governments of Germany, Italy, and Japan actually encouraged higher fertility among their people at the same time that they were complaining of

surplus numbers.[9] It becomes evident in the light of history that the cry of *lebensraum* was used by the Axis nations to seek more space and more people which were the prerequisites of military power.

It is improbable that *lebensraum* will be a true cause of aggression in those countries in which population is a problem because of the inherent weakness that allows overpopulation to exist. If population pressure caused aggression, we would expect to find those nations that are the most seriously overpopulated the worst aggressors. This is not the case because a nation suffering from acute overpopu- is not likely to be powerful enough to be a military threat to anyone.[10]

Population and Power. Even though large population does not guarantee international power, it is a necessary condition of power. Large armies and industries require large population bases to supply manpower for the labor and military forces, to provide consumer demand for the products of industry, and to pay the taxes required to support vast military expenditures. No matter how efficient, no small- or even moderate-sized nation can become a great power today.[11] One writer states that to qualify for admission to great power status currently requires a population of at least 45 million, a figure that must surely be revised upward as the world population increases.[12] A population of great size insures confidence at home and fear and respect abroad. There is strength in numbers because the world knows that it is one of the prerequisites for power and gives a measure of respect for this attribute alone. China, though destitute and powerless in the aftermath of World War II, was accorded the status of one of the "Big Five" when the United Nations was created, primarily on the basis of her large population. India today has very little power in military or economic terms, but her voice is listened to throughout the world because of her great size.[13]

It must be emphasized that, though important, a large population does not guarantee power. It is even a source of weakness to a nation if its people live close to the subsistence line and if the numbers cannot be absorbed into productive work. A high level of professional skill, an efficient industry, and advanced technology are now, and will continue to be, more important than manpower as a determinant of military power.[14] History has proven many times that numbers cannot prevail against advanced industry and technology: Cortez, in the 16th century, conquered several million Mexicans with 400 Spaniards equipped only with guns and horses; again in the 18th century, small British forces were able to win control over India; and finally, in the 19th century, European countries overran a China that contained 10 times their combined population.[15]

Even the military advantages of a large population are partially nullified in the underdeveloped countries. As noted in Chapter II, a large population increase necessarily causes a very high percentage of the population to fall within the youngest age group (under 14 years). This condition tends to depreciate a nation's war potential. Not only does this unproductive group consume food and other needed goods, but they must be reared, which impedes the induction of mothers into the wartime labor force. Most wars will be terminated before those in the group can be inducted into the labor or armed forces.[16]

As described in Chapter II, overpopulation severely limits the formation of industry and the development of a viable economy, both of which are mandatory for conducting modern war. Those nations who are hard pressed to stay ahead of swelling population can ill afford the expense of today's wars. It is estimated that it now costs approximately $50,000 to kill a man in warfare, whereas in Napolean's time it cost $3,000, and in Caeser's time, only 75 cents.[17] India, who cannot begin to feed her teeming millions unaided, recently revealed that the

three weeks of heaviest fighting in the war with Pakistan cost her about $20 million per day. Defense spending in India constitutes about 20 percent of the $4 billion national budget.[18]

Even though a poor nation acquires arms at a fraction of their original cost, the expense of operating and maintaining that equipment is often prohibitive. In order to keep operative six transport aircraft, a helicopter, and two biplanes given her by the Soviet Union, Laos must support 60 Soviet pilots and technicians at a monthly cost of $75,000. This figure approximates what that country earns each month from its exports.[19]

In addition to possessing wealth, a great nation must be capable of manufacturing its own arms, for to depend on another nation for weapons is to jeopardize one's security. Unfortunately, for the nonindustrialized nations the field of military production is one of the most difficult to enter. The most complicated and advanced techniques known to man are employed in armament production.[20] Since the bulk of war material and essential civilian goods are industrial products, the ability to produce these essential goods marks the greatest advantage an industrial nation enjoys over a nation whose population is primarily engaged in subsistence agriculture and peasant handicrafts, regardless of numbers.[21]

Population and War. Although the argument for *lebensraum* is false and overpopulated nations lack the economic and political structure for power, the endemic instability and unrest in overpopulated areas constitutes an ever-present threat to world security and an open invitation to Communist seizure.[22] Since World War II, a high proportion of the crises have had their origins in the underdeveloped areas of the world. China, Korea, Suez, the Congo, Algeria, Vietnam, and Laos are examples.[23]

One of the forms of aggression that can be expected is what one author describes as "bloody

shirt" politics.[24] Sometimes a party in power finds it easier to mask economic problems by action against other nations rather than by an internal adjustment that might injure its special supporters. Militant nationalism tends to take people's minds off other problems, and an army provides a measure of employment. The battle cries against Malaysia, Kashmir, Israel, and Yemen are all present-day examples of this course of action.[25]

To meet the threat of a real or threatened aggressor, other nations in the region must arm. As frustrations and tensions mount, incidents occur and the growing circle of parties to the conflict could become increasingly committed to an escalation of disputes to higher and higher levels. Conceivably, local conflicts can lead to general conflagrations given the cold war struggle of today.[26]

Another real possibility of conflict rising out of the conditions set by the population explosion is the Communist-backed insurgency. Since World War II the Communists have exploited peasant discontent to promote their interests in areas where Communist programs alone would have received little support.[27] This exploitation has increasingly taken the form of massive support to guerilla wars, including the provision of arms, material, advisors, and havens for the conduct of clandestine operations.[28]

The world situation, now and in the foreseeable future, indicates increasing successes of Communist-backed insurgencies. Where these operations have been successful in the past, the local population has been largely sympathetic to the insurgent movement because conditions were so bad that any promise of betterment was gladly received.[29] Also, this type of operation is relatively inexpensive to support, and the nature of the conflict reduces the likelihood of direct confrontation with the Western bloc by the exporting power.[30]

V--CONCLUSIONS

Since man first appeared on earth, human arithmetic has moved from a relatively simple exercise in addition to a complicated one of geometric progression. It took all of the vast reaches of time to build today's population of slightly over three billion. It will take only 40 more years for this number to double, if the present growth rates remain unchanged.

The basic cause of the population explosion lies in man's ability to control nature's historical means of curtailing growth, i.e., starvation, disease, early death, and natural enemies. Simultaneously, there has been no substantial decline in the world's birth rate.

The tremendous increases in world population in the years ahead will not be uniformly distributed over the earth's surface. Those areas that can least afford the increases in population will experience the greatest absolute growth. The underdeveloped nations of the world--most of the countries of Asia, Africa, and South America--in which more than two-thirds of the world's population currently lives, will continue to experience an even closer race between food production and reproduction.

The key problem for underdeveloped countries is to hold a balance between population growth and economic development. Historically, economic gains have quickened the rates of population increase until the demographic transition has been completed; thus, we must assume that the initial effects of economic development will be to intensify the population problem. The two factors, population growth and economic development, are engaged in a race which will last for many years. Suitable techniques and institutions simply do not exist in the underdeveloped countries for raising standards of living where population increases exceed about two percent a year. If they had the necessary qualities to perform this

feat, they would have long since ceased to be underdeveloped.

Massive external aid to the underdeveloped countries is not a solution to the population dilemma. The probable reaction to this temporary economic stimulus is, again, increasing numbers rather than meaningful economic gains.

Food shortages, already a huge problem in the underdeveloped world, will become increasingly worse as populations grow. Barring nuclear war, revolutionary new methods of food production, or massive birth control, there will come a point in the not too distant future when famine will stabilize the world population by causing death rates to rise until the growth is checked.

The people of the underdeveloped world are rapidly becoming aware of the wealth possessed by the developed world and are beginning to believe that they could and should share it. The ensuing tensions and frustrations will cause a continuation of the present political unrest that will further hamper economic growth.

The Western powers are on the defensive with the Soviet group holding the initiative, both politically--owing to their anticolonialist campaigns--and economically, since all existing shortcomings in territories outside the Iron Curtain can plausibly be blamed on the inefficiency or the selfishness of the West. The refusal of the Soviets to discourage population growth fits well with their political policy since the U.S.S.R. is still underpopulated, while population increase outside the bloc embarrasses the West by aggravating political and economic difficulties.

The same is not true with Communist China. The evils of overpopulation will probably not only keep that potential giant from becoming a truly great power, but will likely threaten the very existence

of any government in power regardless of its political orientation.

In terms of military pressures that will explode in the underdeveloped world, if this study is correct, we can expect: more military rebellions potentially escalating into local international wars; chronic disputes and wars between the poor nations; and an increased and even more successful effort by the U.S.S.R. to exert ideological and economic influences upon those areas facing the problems attendant to overpopulation.

FOOTNOTES

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BIOGRAPHIC SKETCH

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A naval aviator, Lieutenant Commander Pitts has served in Utility Squadron 3 and Patrol Squadrons 42 and 49. He is a 1966 graduate of the School of Naval Command and Staff, Naval War College, and is presently assigned to the Staff, Commander Fleet Air Wing 10.